Enhanced Alternate Marking Method

draft-zhou-ippm-enhanced-alternate-marking-00

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Motivation

- Alternate Marking (RFC8321) is technique is an hybrid performance measurement method.
  - ➤ It can be used to measure packet loss, latency, and jitter on live traffic.
  - ➤ The basic Alternate Marking method requires one or two bits to mark consecutive batches of packets.

- However

  - ➤ In some protocols, no additional bit can be used

  - ➤ Limited by the scalability for further extension
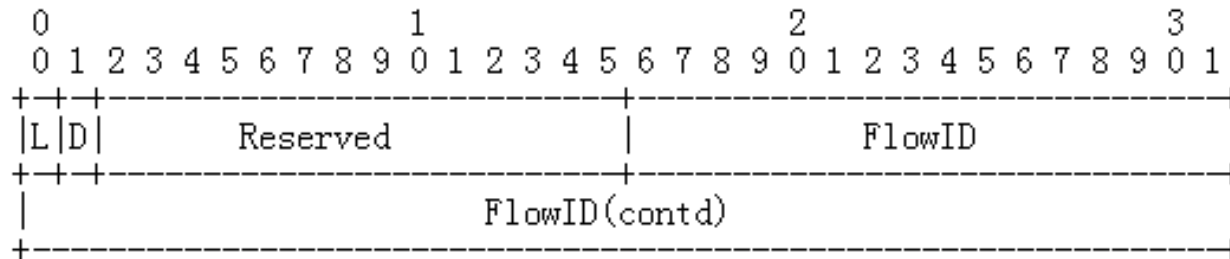
Basic Ideas

- Two kinds of measurement:

Delay, packet loss

Delay, packet loss

End to end

Hop by hop
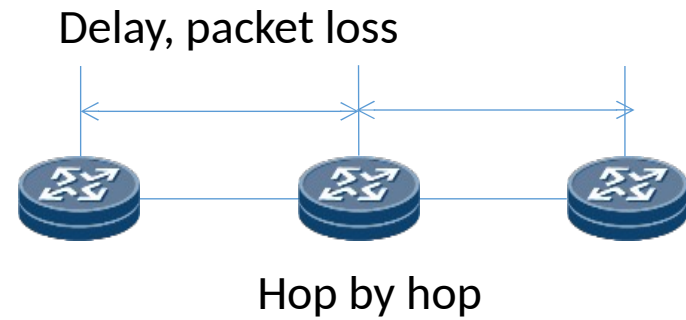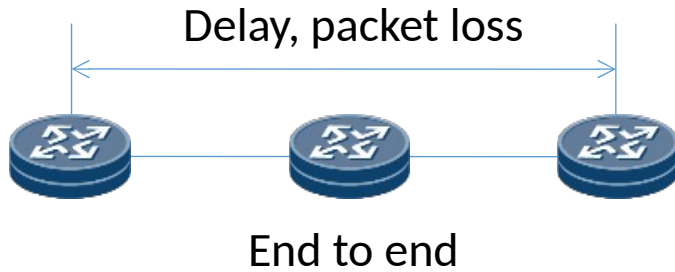
- Flow ID: help to identify the measured flow.

- More reserved field for further use.

Encapsulate with the End to End IOAM

- IOAM [I-D.ietf-ippm-ioam-data] defines a generic meta data structure to records OAM information within user packets while the packets traverse a network.

- The IOAM-E2E-Type filed within the IOAM edge-to-edge option header is a 16-bit identifier which specifies which data types are used in the E2E option data.

- One bit from bit 4-15 can be used to indicate the presence of data used for alternate marking.

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+---------------------------------+---------------------------+
|L|D|         Reserved                |            FlowID         |
+-+-+---------------------------------+---------------------------+
|                          FlowID(contd)                          |
+-----------------------------------------------------------------+
```
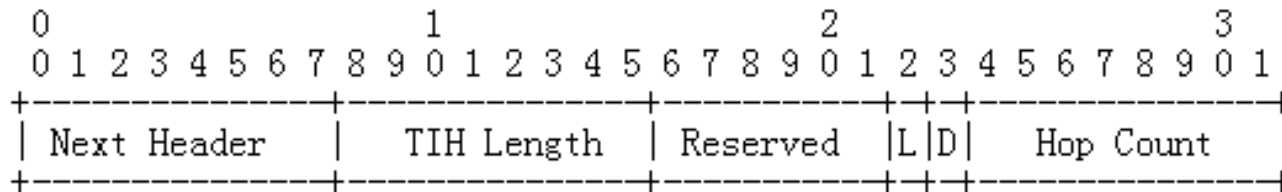
where:
- L - Loss flag;
- D - Delay flag;
- FlowID - 6-octet unsigned integer. Flow identifier field is to uniquely identify a monitored flow within the in-situ OAM domain.

Encapsulate with the PostCard Base Telemetry

- The PostCard Base Telemetry (PBT) [I-D.song-ippm-postcard-based-telemetry] is proposed to directly exports the telemetry data to a collector through separated OAM packets called postcards, while not require inserting telemetry data into user packets.

- This proposes to use the two bits from the Reserved field from the Telemetry Information Header (TIH).

- The existing FlowID within the TIH can be reused.

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+---------------+---------------+-----------+-+-+---------------+
| Next Header   |  TIH Length   | Reserved  |L|D|  Hop Count    |
+---------------+---------------+-----------+-+-+---------------+
```

 where:
- L - Loss flag;
- D - Delay flag.

Thank You and Comments